Assessing Affordability and Equity Considerations

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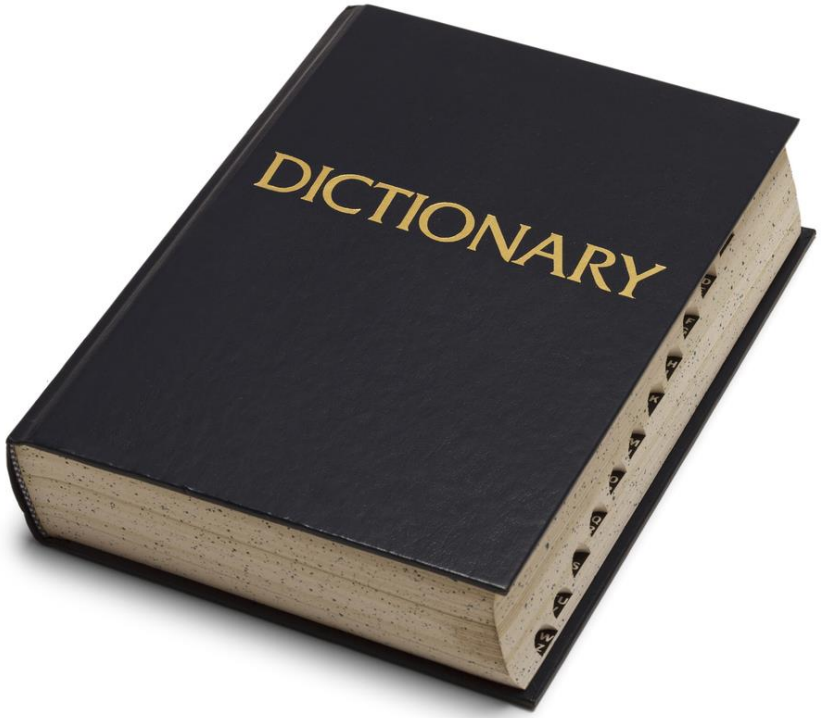
af·ford·a·bil·i·ty (n):

the capacity of customers to pay water rates that reflect the full costs of providing water (and wastewater) service.



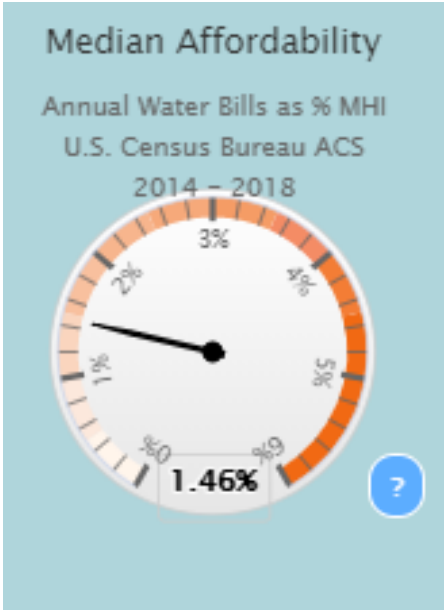
Why do we assess affordability?

- Rate setting
- Financing or funding applications
- Regulatory compliance schedule negotiations

Rate setting

- Can we raise our rates to pay for a capital project?

Can the most vulnerable populations pay afford our water and wastewater service?



Financing or funding applications

- Principal forgiveness
- Loan terms
- Financing costs

Will my utility be prioritized for funding? Does my utility qualify for principal forgiveness?

SRF priority scoring system

- Affordability accounts for 25 of the 100 possible points
  - Residential connections
  - Monthly bill
  - LGU indicators
    - Population change
    - Poverty rate
    - Median household income
    - Unemployment
    - Property valuation per capita

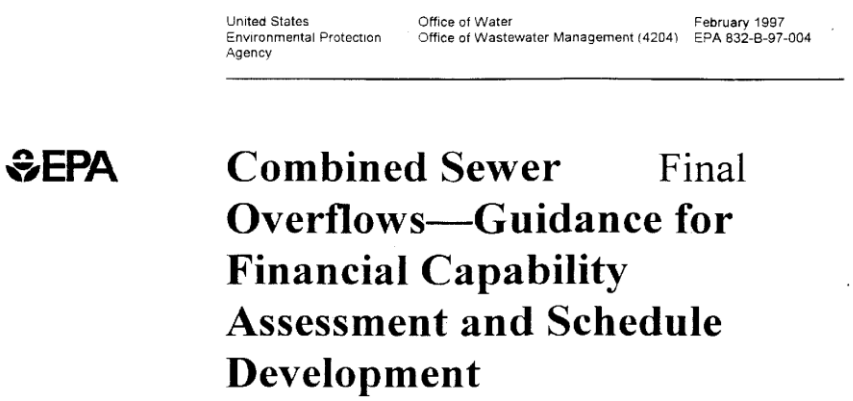
Principal forgiveness

Figure 1. Grant Percentage Matrix as Approved by Authority on March 4, 2016

Monthly Bill for 5,000 Gallons	Lower-than-Median Debt Service per Connection		Higher-than-Median Debt Service per Connection				
	≤ $110	> $110 to ≤ $210	> $210 to ≤ $350	> $350 to ≤ $550	> $550 to ≤ $1,000	> $1,000	
>$58	100%	100%	100%	100%	100%	100%	Higher-than-Median Bill for 5,000 Gallons Usage
>$47 to ≤ $58	75%	75%	75%	75%	100%	100%	
>$40 to ≤ $47	50%	50%	50%	50%	75%	75%	
>$33 to ≤ $40	25%	25%	25%	25%	50%	50%	
>26 to ≤ $33	0%	0%	0%	0%	25%	25%	Lower-than-Median Bill for 5,000 Gallons Usage
≤ $26	0%	0%	0%	0%	0%	25%	
							Debt Servicer per Connection

Regulatory compliance schedule negotiations

Is my utility financially capable and is there a community burden to pay for CWA and SDWA compliance?



United States Environmental Protection Agency | Office of Water, Office of Wastewater Management (4204) | February 1997, EPA 832-B-97-004

EPA

Combined Sewer Overflows—Guidance for Financial Capability Assessment and Schedule Development Final

Integrated Planning Financial Capability Assessment Approach

- Phase 1: The Residential Indicator

Current Wastewater Costs
+
Future Wastewater Costs
=
Total Annual Costs
X
Residential Factor (%)
=
Residential Share of Costs

Residential Share of Costs
÷
Number of Households
=
Cost per Household (CPH)
÷
Median Household Income (MHI)
=
CPH as a Percent of MHI

Integrated Planning Financial Capability Assessment Approach

Phase 2: Financial Capability Indicators (1997 Guidance)

- Selected indicators are assessed to evaluate the financial capability of the community:
  - Debt Indicators
    - Bond rating, debt to market property value
  - Socioeconomic Indicators
    - Unemployment rate, MHI, property tax as percentage of market value, property tax collection rate
  - Financial Management Indicators

Benchmarking

Financial Capability Matrix Category	Implementation Period
Low Burden	Normal Engineering/Construction schedule
Medium Burden	Up to 10 years
High Burden	Up to 15 years (with up to 20 years based on negotiations with EPA and State)

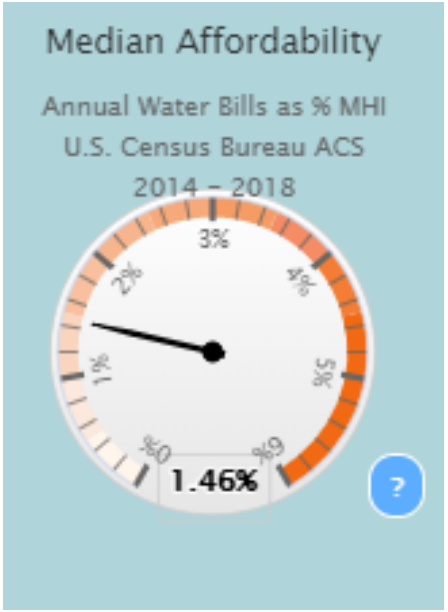
FINANCIAL CAPABILITY MATRIX
Table 3

Permittee Financial Capability Indicators Score (Socioeconomic, Debt and Financial Indicators)	**Residential Indicator** (Cost Per Household as a % of MHI)		
	Low (Below 1.0 %)	Mid-Range (Between 1.0 and 2.0%)	High (Above 2.0 %)
Weak (Below 1.5)	Medium Burden	High Burden	High Burden
Mid-Range (Between 1.5 and 2.5)	Low Burden	Medium Burden	High Burden
Strong (Above 2.5)	Low Burden	Low Burden	Medium Burden

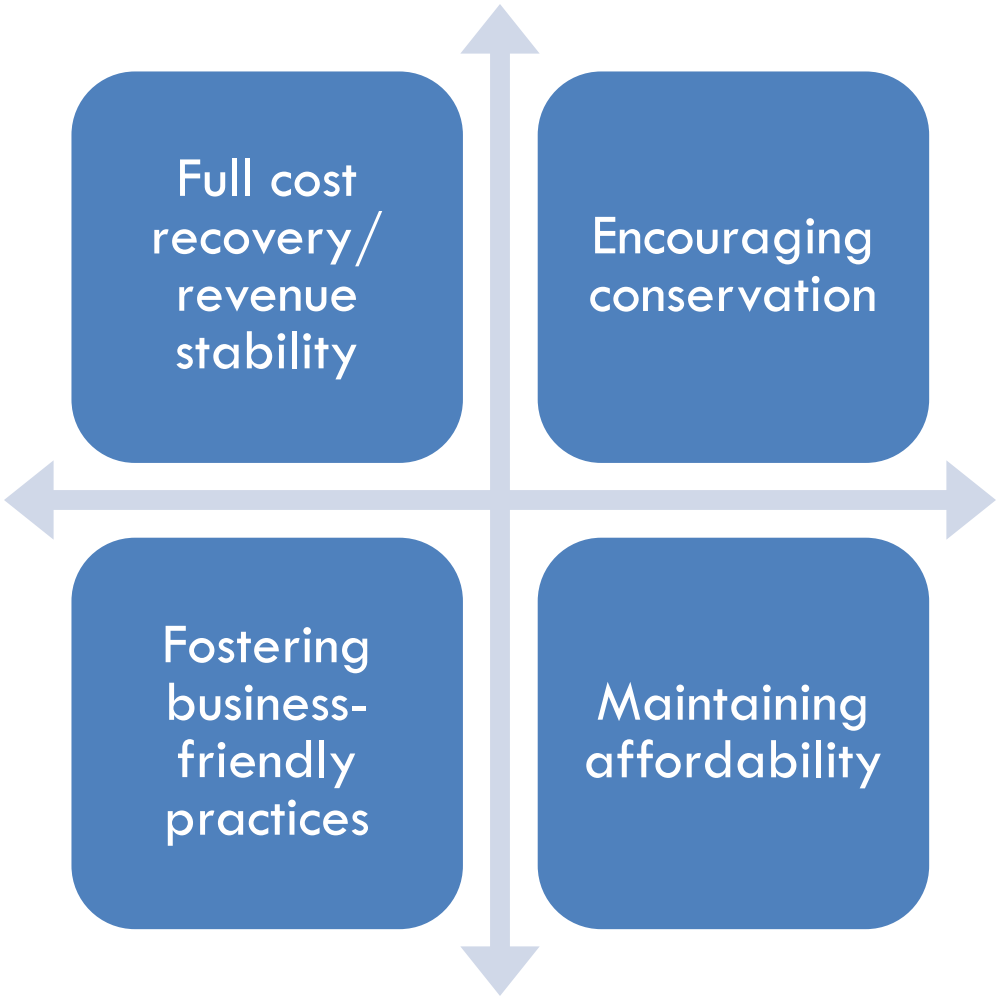
What does the Residential Indicator resemble?

% MHI

- % MHI and 2% threshold were developed by EPA to negotiated compliance schedules
- A utility rate is not "right" or "wrong" based on whether it is below the 2% threshold



Affordability is one system objective

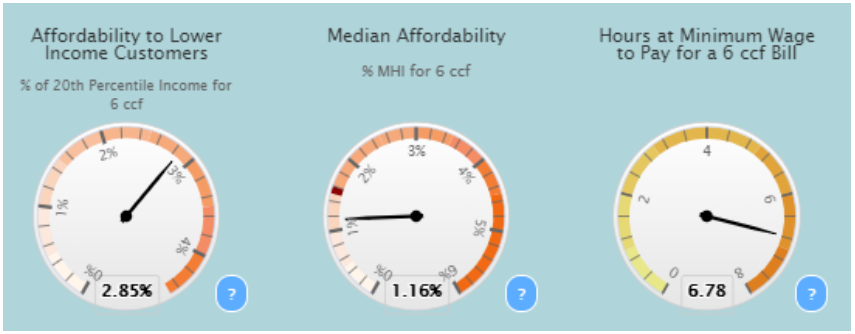



PAST DUE
Affordability
System investment

% MHI criticisms

- Uses average water consumption instead of basic water consumption
- Does not evaluate based on low-income households
- Fails to account for costs of other essential services
- 2 percent cutoff is arbitrary

Alternative metrics



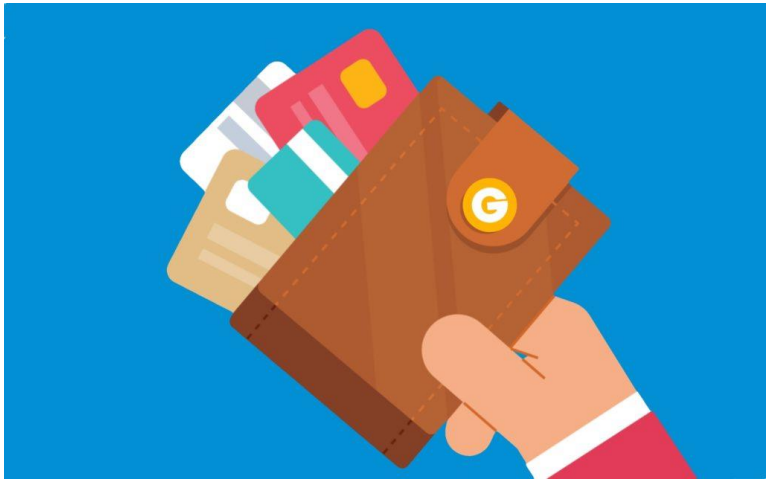
- Hours at minimum wage
- Affordability ratio
- % 20th percentile household income
- Weighted average residential indicator

Hours at minimum wage

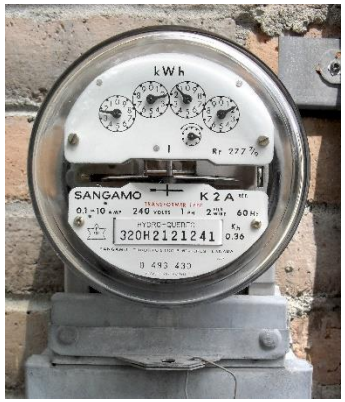
- Monthly bill / Minimum wage
- Assesses labor for low-income customer to pay water bill
- Proposed threshold of 8 hours

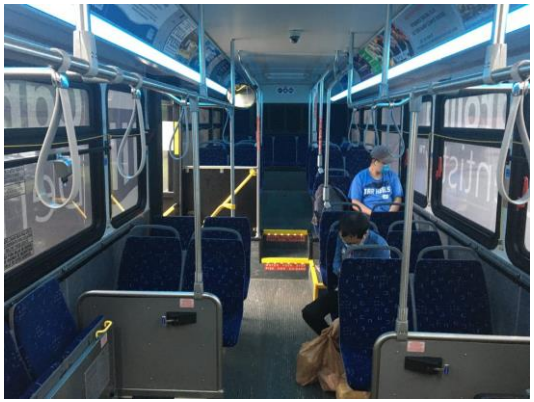
Affordability Ratio

- Affordability Ratio = (Cost of Basic Water + Sewer Service) / (Household Income-Essential Costs)
- Assumes 50 gallons per person per day and the service area's average household size



Essential costs





North Carolina example

- Affordability threshold of 10%
- Essential costs can be greater than 20th percentile household income
- To what extent do low-income households get help from other programs?

	Yearly Income	Taxable Income
MHI (20th Percentile	$28,564	$16,164

Essential Costs	Amount (Yearly)
Health Care	$4,673
Housing	$8,580
Food	$4,260
Other Utilities	$2,699
State Taxes	$533
Federal Taxes	$1,742
Total	$22,487

Basic Water Cost	Amount
Water	$371.24
Wastewater	$411.72
Stormwater	$100.20
Total	$883.16

AR20	14.5%

Affordability in Largest 25 U.S. Cities in 2017

Pop Rank	City	Monthly Basic Service Cost	Affordability Ratio, 4-Person Household			Minimum Wage	Hours at Min Wage (HM)
			20th Percentile Annual income	Est. Disposable Monthly Income	AR_{20}		
1	New York, NY	$ 121.12	$ 18,085	$ 579	20.9%	$ 12.00	10.1
2	Los Angeles, CA	73.11	19,063	888	8.2%	10.50	7.0
3	Chicago, IL	47.27	17,386	576	8.2%	10.50	4.5
4	Houston, TX	74.87	19,109	642	11.7%	7.25	10.3
5	Phoenix, AZ	39.68	21,401	825	4.8%	10.00	4.0
6	Philadelphia, PA	58.54	13,546	524	11.2%	7.25	8.1
7	San Antonio, TX	55.16	19,517	933	5.9%	7.25	7.6
8	San Diego, CA	108.71	26,381	636	17.1%	11.50	9.5
9	Dallas, TX	59.82	18,585	685	8.7%	7.25	8.3
10	San Jose, CA	104.47	33,342	1,188	8.8%	10.50	9.9
11	Austin, TX	91.20	24,438	1,105	8.3%	7.25	12.6
12	Jacksonville, FL	68.23	19,817	873	7.8%	8.05	8.5
13	San Francisco, CA	176.85	24,946	658	26.9%	13.00	13.6
14	Columbus, OH	106.36	18,784	840	12.7%	8.15	13.1
15	Indianapolis, IN	97.60	17,395	724	13.5%	7.25	13.5
16	Fort Worth, TX	66.67	21,817	831	8.0%	7.25	9.2
17	Charlotte, NC	68.84	23,135	1,044	6.6%	7.25	9.5
18	Seattle, WA	180.70	27,290	961	18.8%	15.00	12.0
19	Denver, CO	64.91	21,698	884	7.3%	9.30	7.0
20	El Paso, TX	54.45	17,879	787	6.9%	7.25	7.5
21	Washington, DC	112.51	22,526	785	14.3%	11.50	9.8
22	Boston, MA	99.51	14,913	618	16.5%	11.00	9.0
23	Detroit, MI	92.68	9,436	379	24.4%	8.90	10.4
24	Nashville, TN	65.95	21,153	926	7.1%	7.25	9.1
25	Memphis, TN	39.53	14,913	618	6.4%	7.25	5.5
	25-city Avg	***$ 85.15***	***$ 20,262***	***$ 780***	***11.6%***	***9.19***	***9.2***

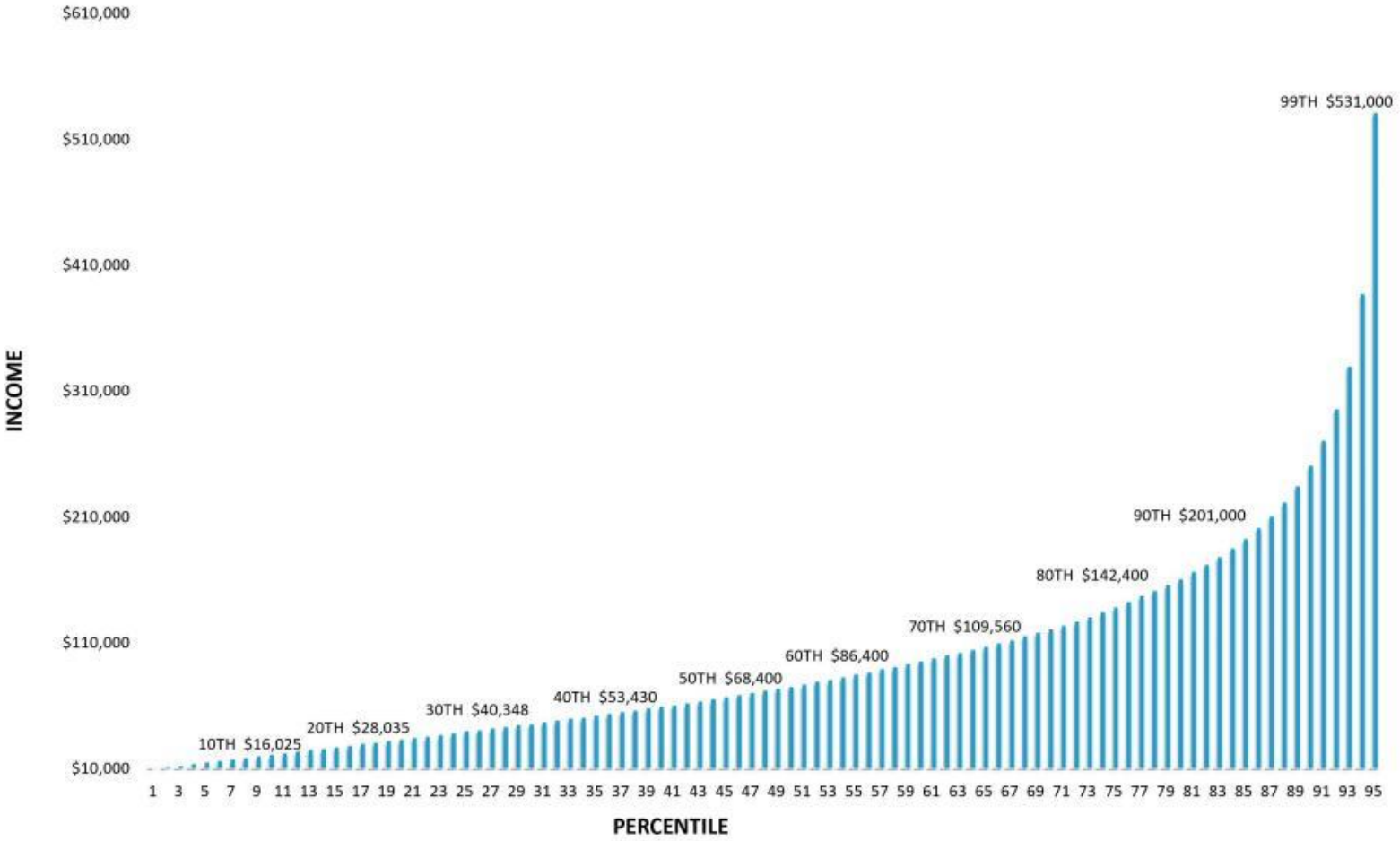
**Does not include low-income assistance programs.*

% 20th percentile household income

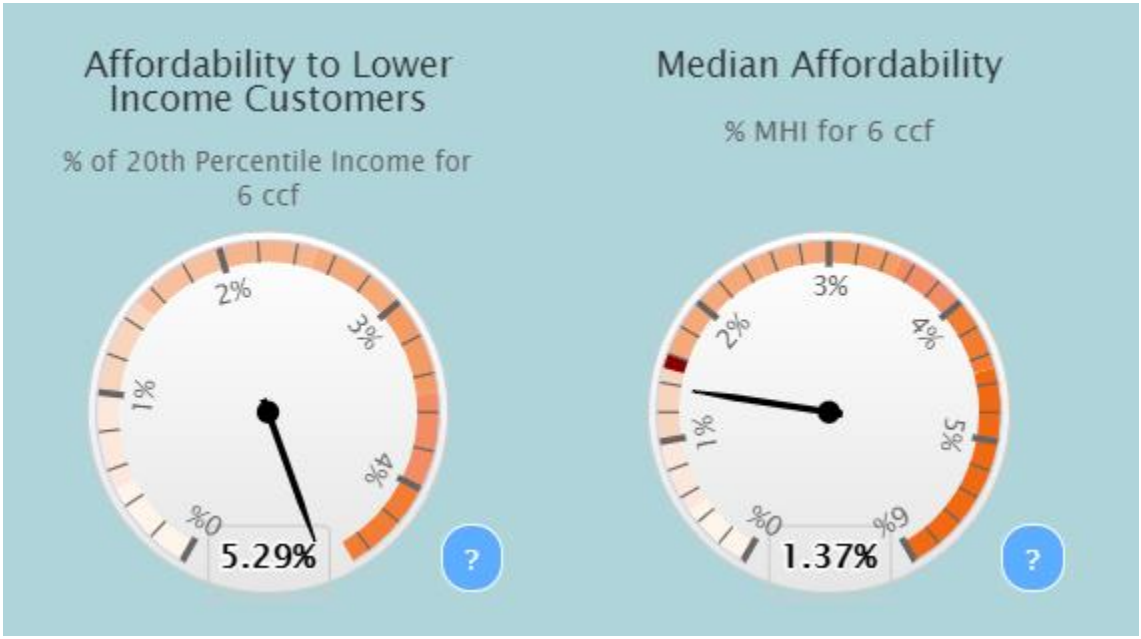
- Annual water + wastewater + stormwater costs / 20th percentile household income
- 50 gallons per person per day for average household size
- Include any tax subsidization from general fund

2020 U.S. Household Income

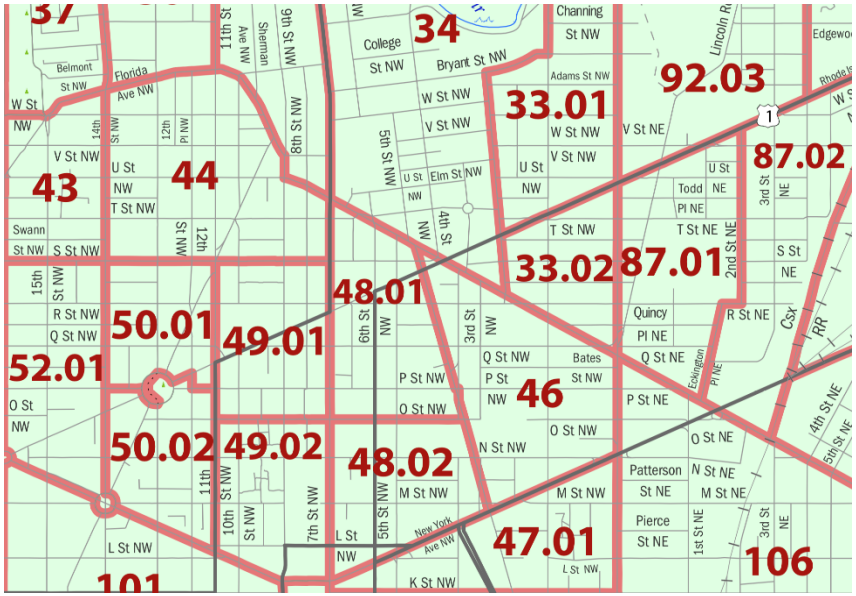
FinanciallyEngineered.com



Different story, same town



Weighted average residential index (WARi)



- Census tract-level weighted residential indicator
- Uses income bins and the average bill by census tract

101			102			103		
Average Bill	$59.82		Average Bill	$62.29		Average Bill	$62.46	
Bin Midpoint	Bill as % of Midpoint	Weighted Impact	Bin Midpoint	Bill as % of Midpoint	Weighted Impact	Bin Midpoint	Bill as % of Midpoint	Weighted Impact
$5,000	14.4%	3.1%	$5,000	14.9%	1.5%	$5,000	14.4%	1.4%
$12,500	5.7%	0.5%	$12,500	6.0%	0.4%	$12,500	5.7%	0.8%
$20,000	3.6%	0.7%	$20,000	3.7%	0.5%	$20,000	3.6%	0.6%
$30,000	2.4%	0.3%	$30,000	2.5%	0.2%	$30,000	2.4%	0.4%
$42,500	1.7%	0.1%	$42,500	1.8%	0.3%	$42,500	1.7%	0.3%
$62,500	1.1%	0.2%	$62,500	1.2%	0.1%	$62,500	1.1%	0.2%
$87,500	0.8%	0.1%	$87,500	0.9%	0.1%	$87,500	0.8%	0.0%
$125,000	0.6%	0.0%	$125,000	0.6%	0.1%	$125,000	0.6%	0.0%
$175,000	0.4%	0.0%	$175,000	0.4%	0.0%	$175,000	0.4%	0.0%
$200,000	0.4%	0.0%	$200,000	0.4%	0.0%	$200,000	0.4%	0.0%
Total	X	5.0%	Total	X	3.3%	Total	X	3.7%
Tract Weight x # of Households		48.11	Tract Weight x # of Households		49.61	Tract Weight x # of Households		75.86

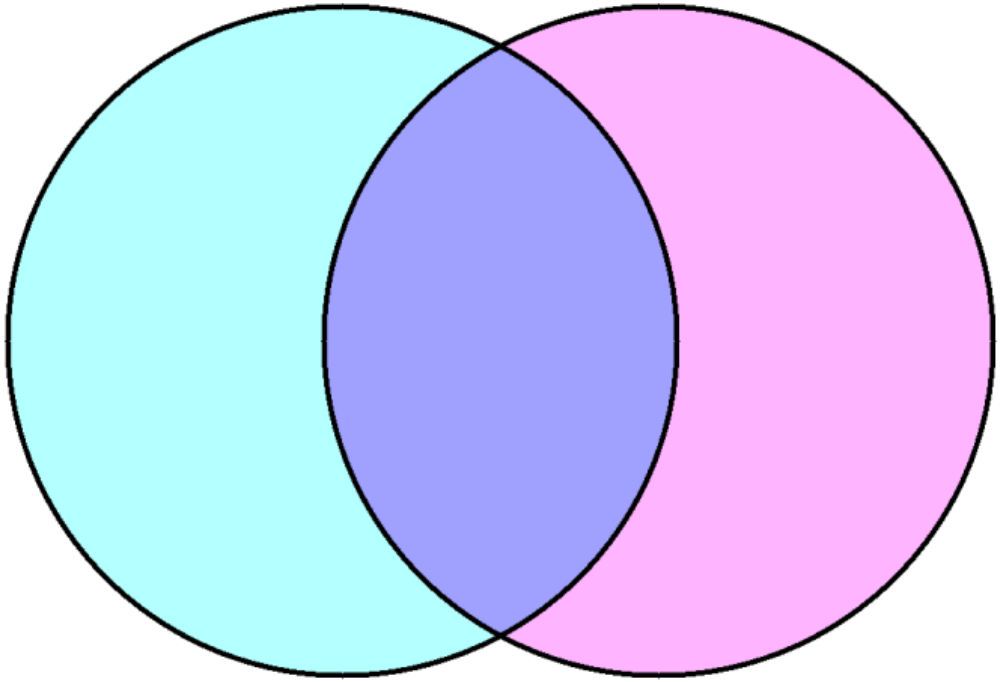
Sum of All Census Tracts	2311.79
Total Number of Households	86,819
WARi	2.7%

- Weighted impact = Bill as % of mid-point * % of census tract population in that income bin

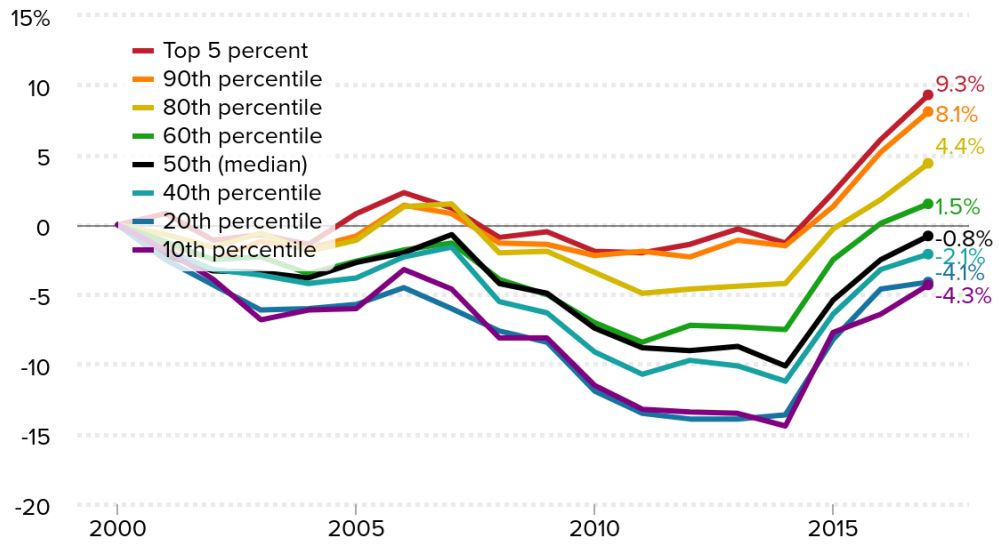
WARi takeaways

- Need to know location of bills in GIS
- Can see burden by location
  - May help target assistance to burdened census tracts
- Can analyze at the census block group level for finer resolution

What do the newer metrics have in common?



Cumulative percent change in annual household income for selected income percentiles, 2000–2017

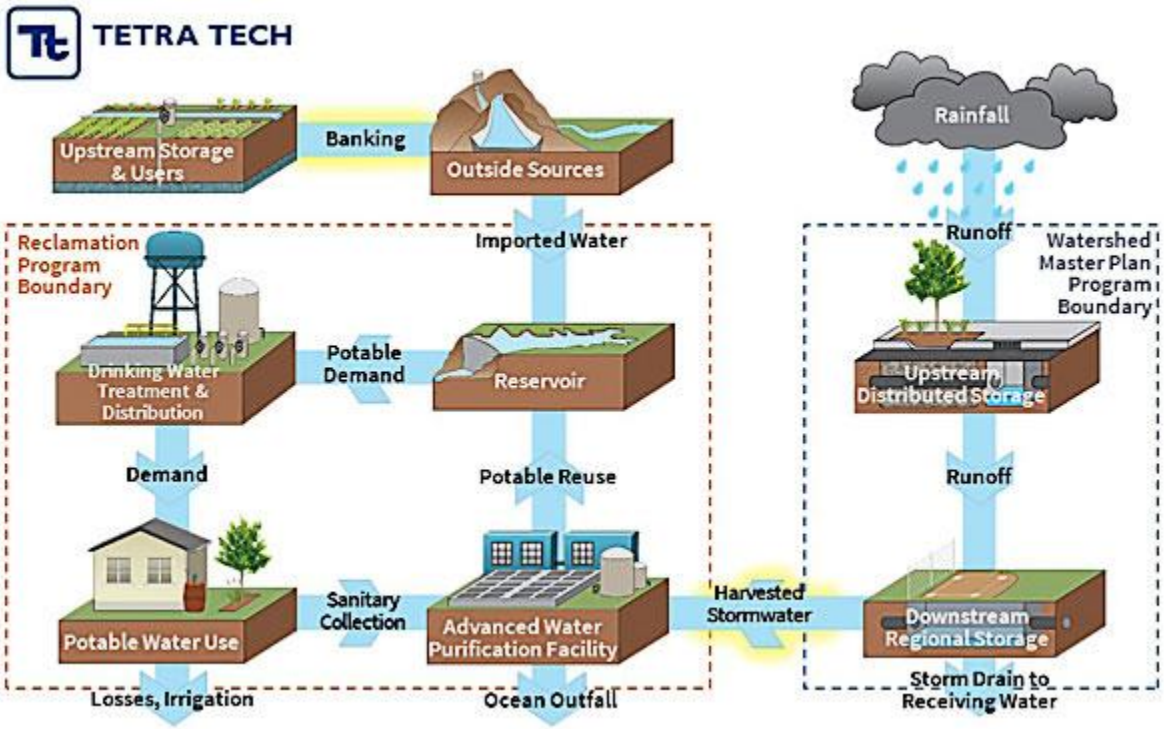


Note: Because of a redesign in the CPS ASEC income questions in 2013, we imputed the historical series using the ratio of the old and new method in 2013.

Source: EPI analysis of Current Population Survey Annual Social and Economic Supplement family

They consider low-income households

In the last 20 years, low-income households have experienced a decline in cumulative income nationally.



They examine the total cost of water

Total cost of water is water, wastewater, and stormwater.

OTHER WAYS TO ASSESS AFFORDABILITY?

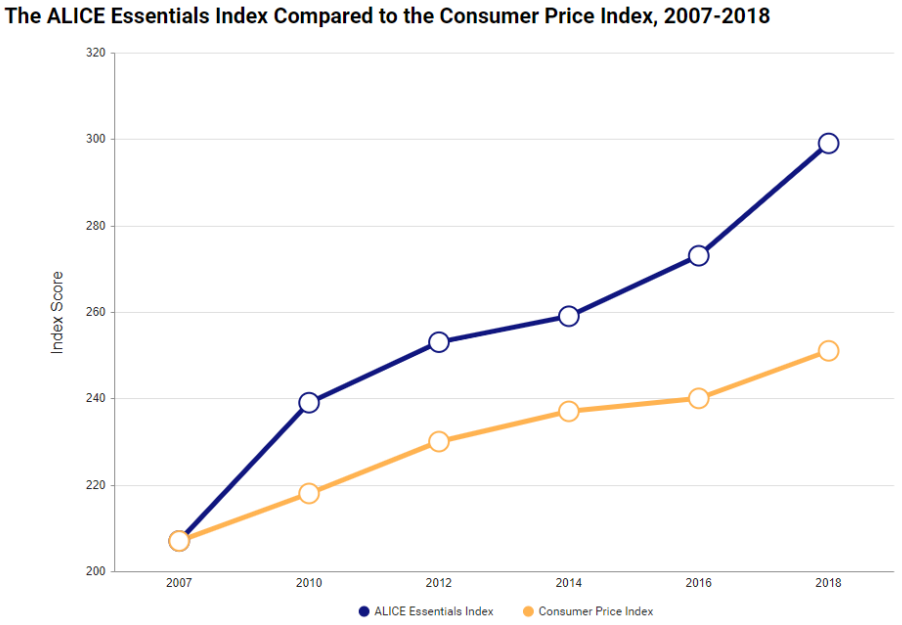
ALICE

- Asset limited, income constrained, employed
- Measure of households that earn above the federal poverty line, but below the cost of basic household needs
- Each county has 'household survival budget'

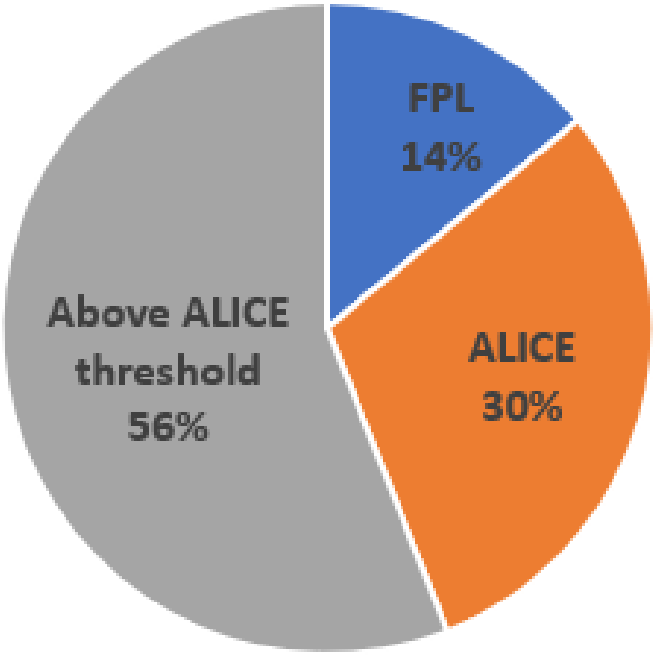
https://www.unitedforalice.org/

ALICE index

- From 2007 to 2018, the ALICE index increased 3.3% annually while CPI increased 1.8% annually
- Cost of basics like housing and health care have risen faster than manufactured goods



North Carolina ALICE



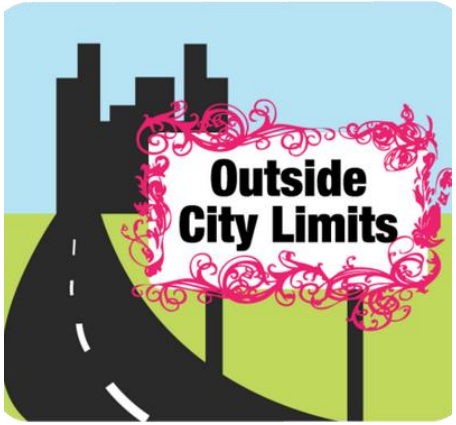
Analyze ALICE by county: https://www.unitedforalice.org/national-overview

Customer tradeoffs

- According to a 2018 survey of 413 low-income households in Detroit, 94.3% of low-income households cut back on essential household expenses to better afford their water bill.

What don't these metrics consider?

- Outside customers?
- Commercial customers?
- Renters with no sub-meter?



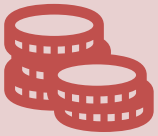
How can you address affordability?

- Operate as efficiently as possible
  - Use the lowest cost capital financing possible
  - Asset management
  - Explore regional partnership
  - Others?
- Customer Assistance Programs

What you probably should not do…

Purposefully not cover your operating expenses

Delay essential infrastructure improvements or repairs



Subsidize your enterprise fund with your general fund

Customer Assistance Programs

- Bill discounts, where legal
- Flexible terms
- Rate structure design
- Temporary assistance
- Water efficiency assistance

Takeaways

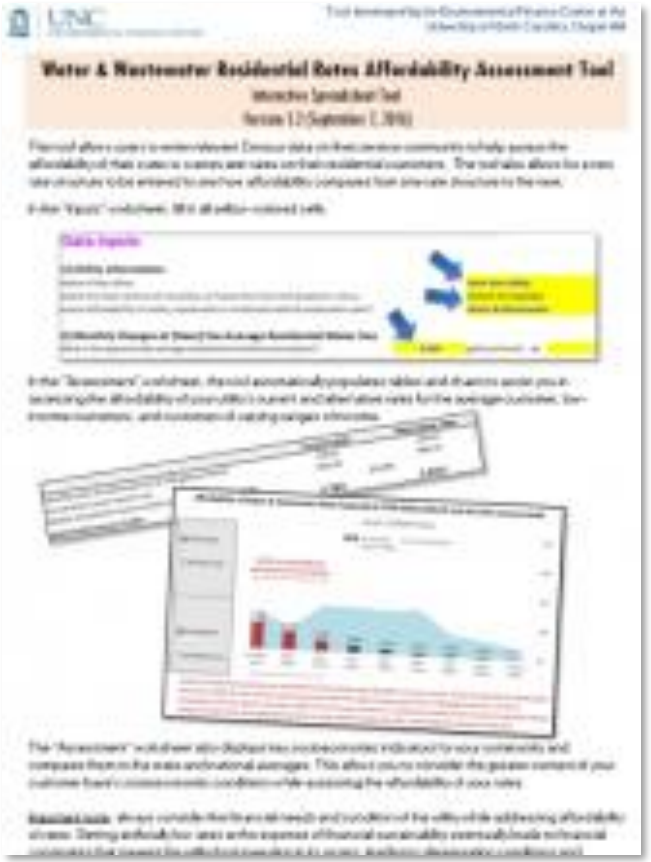
- EPA does not recommend affordability benchmarks for utilities to make local decisions
- Affordability assessments at the local level can and should be flexible
- Remember, utilities with proficient technical, managerial, and financial capacity are more affordable. This should be your priority.

AFFORDABILITY TOOL

Water and Wastewater Residential Rates Affordability Assessment Tool

Go to
http://efc.sog.unc.edu
and search for
"Affordability Assessment Tool"

Uses information on rates, average usage, and census data



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